REMARKS

Reconsideration of this application as amended is respectfully requested. Claims 6 through 8,10, 23, and 25 stand rejected under § 35 U.S.C. 102(e) as being anticipated by U.S. Patent number 6,546,100 by Drew. ("Drew") Claims 18 through 21 stand rejected under § 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication number 2002/0113649 A1 by Tambe et al. ("Tambe"). Claims 1, 2, 3, 5, 16, 22 and 24 stand rejected under § 35 U.S.C. 103(a) as being unpatentable over U.S. Patent number 1,711,653 by Quarles ("Quarles") in view of Federal Telephone and Radio Corporation (FTRC) (Reference Data for Radio Engineers). Claims 11, 13 through 15 and 17 stand rejected under § 35 U.S.C. 103(a) as being unpatentable over Drew in view of U.S. Patent number by Shenoi ("Shenoi").

Claims 6, 16-18, 20, and 23 have been amended. It is respectfully submitted that the amendments do not add new matter.

The Office Action rejected Claims 6 through 8, 10, and 25 under § 35 U.S.C. 102(e) as being anticipated by Drew. The Office Action states that:

> Drew discloses a capacitor (Fig. 4, reference 46; column 3, lines 2-3) connected in parallel across the first winding. Claim 6 further claims a second capacitive element in parallel with the second winding. Drew discloses a capacitor (Fig. 4, reference 48; column 3, lines 3-5) connected in parallel across the second winding.

(Office Action dated 7-8-03, p. 3) (emphasis added)

However, Applicants respectfully submit that claim 6 is not anticipated by Drew. Claim 6, as amended, recites:

> 6. A load coil for insertion along a local loop, the load coil comprising:
>
> . . .
>
> a first capacitive element electrically connected in series with an intra-winding capacitance of the first winding; and

> a second capacitive element electrically connected in series with an intra-winding capacitance of the second winding, wherein the first capacitive element and the second capacitive element have capacitance values relative to the intra-winding capacitance value of at least one of the first winding and the second winding to permit passage of DSL signals across the load coil. (emphasis added).

In contrast, Drew discloses a capacitor connected in parallel to a winding. Drew discloses:

> The device further has a capacitor connected in parallel across each winding. The values of the capacitors are chosen to provide a low impedance path that bypasses the windings for frequencies in the range of 20 kHz to 1.1 MHz (Abstract, emphasis added).

Drew discusses and illustrates the interwinding capacitance of the windings. (Figures 1, 3, and 5 labeled C_{ic}, Col. 2, Ln. 24 - Col. 3 Ln. 20.) However, Drew discloses and teaches to place a capacitor (C_{tc}) in parallel to the winding (L_{choke}) and choosing the value of the capacitor relative to the inductance value of the winding that the capacitor shares a parallel relationship with. Drew discloses:

> The values of the inductance L'_{choke} and capacitance C'_{tc} are 7.5 mH and 100 nF, but they could be in the ranges of 2.5 mH to 10 mH and 50 nF to 200 nF, respectively. (Col. 3, Lns. 12-15).

Therefore, Drew does not disclose a first capacitive element electrically connected in series with an intra-winding capacitance of the first winding. Drew also does not disclose a second capacitive element electrically connected in series with an intra-winding capacitance of the second winding. Drew also does not disclose the first capacitive element and the second capacitive element having capacitance values relative to the intra-winding capacitance value of at least one of the first winding and the second winding to permit passage of DSL signals across the load coil. Accordingly, independent claim 6 is not anticipated by Drew under § 35 U.S.C. 102(e).

Given that claims 7-10 depend from and include the limitations of claim 6, claims 7-10 are not anticipated by Drew under § 35 U.S.C. 102(e).

The Office Action rejected independent claim 23 under § 35 U.S.C. 102(e) as being anticipated by Drew. However, Applicants respectfully submit that claim 23 is not anticipated by Drew. Claim 23, as amended, recites:

> 23. A system to improve simultaneous transmission of POTS-band signals and DSL signals across a local loop, the system comprising:
> . . .
> a first inductor winding wrapped about the inductor core and coupling the first wire to the third wire, and
> a second inductor winding wrapped about the inductor core and coupling the second wire to the fourth wire; and
> . . .
> a first capacitor coupling the first wire to the fourth wire, and
> a second capacitor coupling the second wire to the third wire, wherein
> the first capacitive element to electrically connect in series with the intra-winding capacitance of the first inductor winding.

As discussed above, Drew discloses connecting a capacitor electrically in parallel with the inductor winding, rather than connecting a first capacitive element electrically in series with the intra-winding capacitance of the first inductor winding. Drew discloses and teaches to place a capacitor (C_{tc}) in parallel to the winding (L_{choke}) and choosing the value of the capacitor relative to inductance value of the winding the capacitor that shares a parallel relationship with.

Therefore, Drew does not disclose a first inductor winding coupled to the first wire and the third wire and a first capacitor coupled to the first wire and the fourth wire. Drew does not disclose a first capacitive element electrically connected in series with the intra-winding capacitance of the first inductor winding. Accordingly, independent claim 23 is not anticipated by Drew under § 35 U.S.C. 102(e).

The Office Action rejected claims 18 through 21 under § 35 U.S.C. 102(e) as being anticipated by Tambe. However, Applicants respectfully submit that claim 18, as amended, is not anticipated by Tambe. Claim 18, as amended, recites:

> 18. A method for improving simultaneous transmission of POTS-band signals and DSL signals across a local loop, comprising:
> . . .
> the capacitive elements having capacitance values that are selected based upon a capacitance value of the coupled inductor; and
> amplifying the DSL signals between the first segment of the local loop and the second segment of the local loop but after the coupled inductor and the capacitive elements.

However, Tambe is completely silent about amplifying a DSL signal. If a reference does not even discuss a claim limitation, then the reference cannot disclose that limitation. Tambe is completely silent about filtering out DSL signals in an upstream frequency band prior to amplifying DSL signals in the downstream frequency band. Tambe teaches selecting a capacitor having a capacitance value based upon an inductance value of the inductor winding. Accordingly, independent claim 18 is not anticipated by Tambe under § 35 U.S.C. 102(e).

Given that claims 19-21 depend from and include the limitations of claim 18, claims 19-21 are not anticipated by Tambe under § 35 U.S.C. 102(e).

Note, Tambe discloses and teaches connecting a capacitor electrically in parallel with an inductor winding. In further contrast, claim 20 recites:

"coupling a first wire of the first segment of the local loop to a second wire of the second segment of the local loop via a first capacitive element, and coupling a second wire of the first segment of the local loop to a first wire of the second segment of the local loop via a second capacitive element."

The Office Action rejected claims 1, 2, 3, 5, and 24 under 35 U.S.C. §103(a) as being obvious in view of Quarles and the Reference Data for Radio Engineers. However, Applicants respectfully submit that claims 1, 2, 3, 5, and 24 are not obvious in view of Quarles and the Reference Data for Radio Engineers.

The Examiner acknowledges that Quarles discloses and teaches selecting the capacitance value relative to the capacitance value between the two lines making up a twisted pair. (Office Action dated 7-8-03, p. 3) (emphasis added)

Quarles explicitly discloses and teaches that the value of the capacitor is significant to Quarles invention, because the value of the capacitor contributes to the variable effective inductance of the loading unit 5. Quarles discloses that the effective inductance of a network equivalent (FIG. 3) of the loading unit 5 is $L_e = L/(1 + 1/(2p^2LC))$, where C is a capacitance of the condenser 8, L is an inductance of the inductance coil 7, and p is the angular velocity (page 2, lines 36-58, 85-102, and Equation (1)). The purpose of Quarles' invention is designed to use the variable effective inductance of the loading unit 5 to correct for transient distortion of POTS signals over each section of line 6, which depends upon lengths of each section of line 6. Quarles discloses, "The present invention proposes to overcome this difficulty [transient distortion of frequencies in the voice range] by using instead of the inductance coils of the Pupin-Cambell system, an improved loading unit, the effective inductance of which is a variable quantity depending upon the frequency of the transmitted waves. (page 1, lines 63-69). Quarles discloses and teaches selecting capacitors having a capacitive value based upon the total capacitance measured between the wires comprising each section of line 6 to compensate for transient distortion. Thus, the

selection of the range of the capacitive values for the capacitors in Quarles, referred to as condensers, depends upon a length of each section of line 6.

Quarles does not disclose or suggest that the capacitive values of condensers 8 are selected based upon any capacitance associated with the inductance coils 7. Therefore, nowhere in Quarles does the reference disclose or suggest the structural limitation of "the first capacitive element and the second capacitive element each have capacitance values that are at least four times the inter-winding capacitance value between the first winding and the second winding," as recited in claim 1.

The Reference Data for Radio Engineers merely discloses a capacitance associated with the telephone transmission line. The Reference Data for Radio Engineers does not disclose or suggest a capacitance value associated with the windings. The Reference Data for Radio Engineers does not disclose or suggest a capacitive element having a capacitance value relative to the capacitance value associated with the windings.

Even if adequate motivation existed to combine Quarles and the Reference Data for Radio Engineers, the selection of the range of the capacitive values for the capacitors would depend upon a length of each section of line to compensate frequencies in the voice range for transient distortion.

Applicants respectfully submit that the limitation of "the first capacitive element and the second capacitive element each have capacitance values that are at least four times the inter-winding capacitance value between the first winding and the second winding to permit passage of DSL signals across the load coil" recited in claim 1, is a structural limitation. All capacitors and inductors have values that affect the impedance

presented to signals passing through those reactive components. Depending on the value selected for those reactive components, the signals passing through those reactive components may be blocked entirely or pass with little attenuation. As such, all of the wording in that limitation must be considered for patentability.

The combination of Quarles and the Reference Data for Radio Engineers could at best suggest a capacitive value for a capacitor based upon the length of each section of line in order to compensate frequencies in the voice range for transient distortion. Therefore, claim 1 is not rendered obvious by Quarles and the Reference Data for Radio Engineers, individually or in combination.

Further, claim 1 is not rendered obvious by the combination of Quarles and the Reference Data for Radio Engineers with an interwinding capacitance value from Drew. "Our [Federal circuit} case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references." In re Lee, 277 F.3d 1338, 1344 (Fed. Cir. 2002). The PTO bears the burden of proving an obviousness type rejection based on findings of fact and not based on conclusive statements. In re Dembiczak, 175 F.3d 994 (Fed. Cir. 1999). Adequate findings of fact can come from several sources. Id. The motivation to combine reference must be found in the cited references themselves. Id. Alternatively, the PTO may establish that one of ordinary skill in the art would have been motivated to combine the references with articulated findings of fact regarding: 1) the level of skill in the art; 2) the relationship between the fields of the cited art; and 3) the particular features of the

prior art references that would motivate one of ordinary skill in applicant's particular art to select elements disclosed in references from a wholly different field. Id.

As discussed above, neither Quarles, the Reference Data for Radio Engineers or Drew, teaches or suggests the limitation of "a second capacitive element disposed between the output of the first winding and the output of the second winding, wherein the first capacitive element and the second capacitive element each have capacitance values that are at least four times the inter-winding capacitance value between the first winding and the second winding to permit passage of DSL signals across the load coil." In fact, Drew teaches away from such a limitation. Drew discloses and teaches to place a capacitor (C_{tc}) in parallel to the winding (L_{choke}) and to choose the value of the capacitor relative to the inductance value of the winding the capacitor shares a parallel relationship with. Quarles teaches away from such a limitation. Quarles discloses and teaches selecting capacitors having a capacitive value based upon the total capacitance measured between the transmission wires to compensate for transient distortion in frequencies in the voice range. Therefore, neither reference contains adequate motivation to combine. Further, the combination would still not disclose all of the limitations stated in claim 1.

In addition, the articulated findings of fact do not provide adequate motivation to suggest the limitations in claim 1. The loading coil disclosed in Drew electrically and physically differs in structure that the loading coil disclosed in Quarles. Therefore, the interwinding capacitance value of the loading coil disclosed in Drew and Quarles may be quite a bit different. Thus, a comparison of an interwinding capacitance value of the loading coil disclosed in Drew to calculated capacitive value from Quarles and a line

value from the Reference Data for Radio Engineers may be completely inaccurate and does not provide adequete findings of fact factor required by the law. Motivation of one of ordinary skill in the DSL art is lacking to select elements disclosed in references in the light that Quarles teaches selecting capacitors having a capacitive value based upon the total capacitance measured between the wires comprising each section of line 6 to compensate for transient distortion in frequencies in the voice range and Drew teaches away from selecting capacitors having a capacitive value based a capacitance value associated with an inductor. Further, the examiner did not articulate 1) the level of skill in the art; and 2) the particular features of the prior art references that would motivate one of ordinary skill in applicant's particular art to select elements disclosed in those references to construct the limitations in claim 1.

Therefore, claim 1 is not rendered obvious by Quarles and the Reference Data for Radio Engineers, individually or in combination. Given that claims 2, 3, 5, and 24 depend from and include the limitations of claim 1, claims 2, 3, 5, and 24 under 35 are not obvious in view of Quarles and the Reference Data for Radio Engineers.

The Office Action rejected claim 16 under 35 U.S.C. §103(a) as being obvious in view of Quarles and the Reference Data for Radio Engineers. However, Applicants respectfully submit that claim 16 is not obvious in view of Quarles and the Reference Data for Radio Engineers. Claim 16 recites:

> 16. A load coil . . . comprising:
> . . .
> wherein the capacitive means to electrically connect in series with an inter-winding capacitance of the inductive means.

As discussed above, Drew does not teach or suggest a capacitive means to electrically connect in series with an inter-winding capacitance of the inductive means. Drew teaches away from such a limitation. Drew discloses and teaches to place a capacitor (C_{tc}) in parallel to the winding (L_{choke}) and to choose the value of the capacitor relative to the inductance value of the winding the capacitor shares a parallel relationship with. Quarles teaches away from such a limitation. Quarles discloses and teaches selecting capacitors having a capacitive value based upon the total capacitance measured between the wires comprising each section of line 6 to compensate for transient distortion in frequencies in the voice range.

Therefore, claim 16 is not rendered obvious by Quarles and the Reference Data for Radio Engineers, individually or in combination.

The Office Action rejected claim 22 under 35 U.S.C. §103(a) as being obvious in view of Quarles and the Reference Data for Radio Engineers. However, Applicants respectfully submit that claim 22 is not obvious in view of Quarles and the Reference Data for Radio Engineers. Claim 22 recites:

22. A system . . . comprising:

. . .

a second inductor winding wrapped about the inductor core and coupling the second wire to the fourth wire; and

capacitive elements configured to pass the DSL signals traversing the first and second local loops, the capacitive elements including

a first capacitor coupling the first wire to the fourth wire, and

a second capacitor coupling the second wire to the third wire, wherein the first capacitor and the second capacitor have capacitance values that are at least four times an inter-winding capacitance value between the first inductor winding and the second inductor winding.

As discussed above, Drew does not teach or suggest a second inductor winding coupling the second wire to the fourth wire and a second capacitor coupling the second wire to the third wire. Drew discloses and teaches to place a capacitor (C_{tc}) in parallel to the winding (L_{choke}) and to choose the value of the capacitor relative to the inductance value of the winding the capacitor shares a parallel relationship with. Quarles teaches away from such a limitation. Quarles does not teach or suggest a second capacitor have capacitance values that are at least four times an inter-winding capacitance value between the first inductor winding and the second inductor winding. Quarles discloses and teaches selecting capacitors having a capacitive value based upon the total capacitance measured between the wires comprising each section of line 6 to compensate for transient distortion in frequencies in the voice range.

Therefore, claim 22 is not rendered obvious by Quarles and the Reference Data for Radio Engineers, individually or in combination.

The Office Action rejected claims 11, 13 through 15 and 17 under 35 U.S.C. 103(a) as being unpatentable over Drew in view of Shenoi. However, Applicants respectfully submit that claims 11, 13 through 15 and 17 are not obvious in view of Drew and Shenoi.

As discussed above, Drew does not teach or suggest the limitation "capacitive elements have capacitance values relative to a capacitance value of the coupled

inductor." Drew discloses and teaches to place a capacitor (C_{tc}) in parallel to the winding (L_{choke}) and to choose the value of the capacitor relative to the inductance value of the winding the capacitor shares a parallel relationship with. Shenoi is completely silent on the selection of capacitive values of components in the load coil. Therefore, claims 11, 13 through 15 are not obvious in view of Drew and Shenoi.

Conclusion

It is respectfully submitted that in view of the amendments and remarks set forth herein, the rejections and objections have been overcome. An Information Disclosure Statement is also submitted with this amendment. Applicants reserve all rights with respect to the application of the doctrine equivalents. If there are any additional charges, please charge them to our Deposit Account No. 02-2666.

Respectfully submitted,

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